

Mass Production of Hardware for Chain Store Distribution

General plant layout and equipment for the manufacture of miscellaneous hardware products.

THE meteoric growth to gigantic proportions of chain stores has been far reaching in its influence on many lines of manufacture, for it has made possible the mass production of a great variety of the more commonly used products. The usual economic cycle of lower prices, expanded demand, increased output and betterment in quality has followed.

Of all the individual enterprises, which have been created and rapidly expanded under this influence, the Indestro Manufacturing Company of Chicago, Ill., stands close to the head of the list. Organized to manufacture a bottle capper for the housewife, today it is the world's largest maker of this item. With this as a start the company quickly branched out into a line of popular priced hardware and automobile accessories and is already rated as one of the largest manufacturers of these lines in the world, and this enterprise is only six years old.

With Woolworth, Kresge and other chain stores as customers,

mass production was assured and the able management saw to it that the economic cycle operated uninterruptedly. At the present time the company makes 185 different items, its products being distributed in practically every country in the world. More than 60,000 pairs of pliers are shipped to one concern alone every month. More than 5,000 mousetraps are produced and shipped daily.

The greatest production of this company is in socket wrenches and of these it puts out the most complete line in the world. Many unique designs have been developed by the company's engineering staff of which probably the best known are sets in display containers, consisting of 8 machinist sockets, ratchet wrench, L handle, and combination adapter with screw driver bit. This set is put up in a frame in which it is displayed by the retailer without opening a box. This is only one item of a self selling line that is fast gaining popularity.

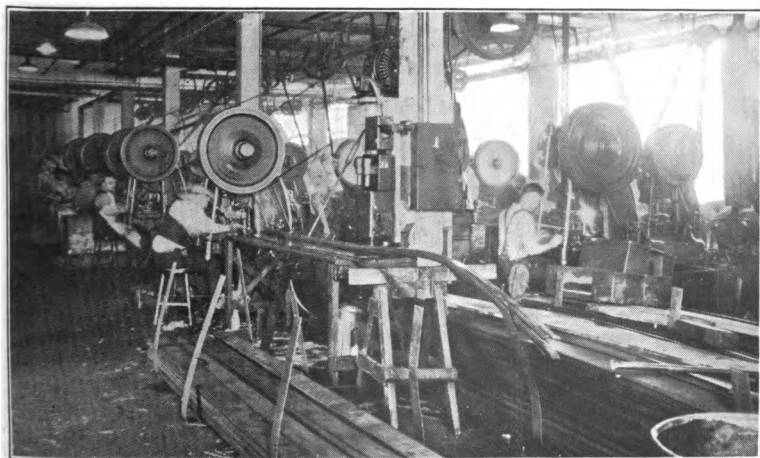


Fig. 1 View of punch press department where 75 punch presses work two shifts a day.

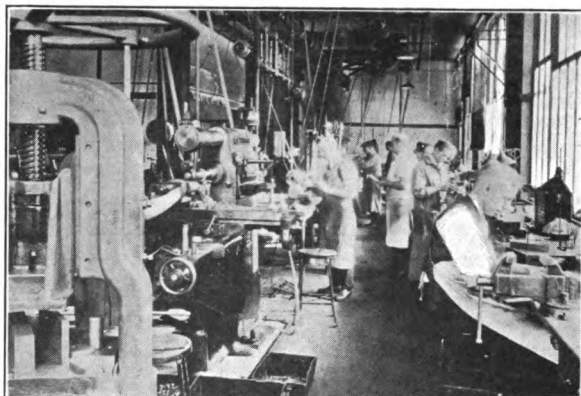


Fig. 2 Tool and die room for the manufacture of hardware.

Plant Layout

The plant in which these tools and other products are manufactured is housed in a modern three-story building 150 by 380 ft. The manufacturing processes are segregated into departments as follows: screw machine, punch press (light), punch press (heavy), tool and die room, machinists repair, heat treating, japanning, nickel plating, assembling and shipping. The raw material is steel and is received in the form of bars, rods, strips, and coils. The fabricated tonnage shipped amounts approximately to 250 tons monthly, or 10 tons per day.

Punch Press Department

The heavy punch press department, Fig. 1, is on the first floor and includes 50 machines driven from five separate line shafts. Here steel pliers, flat wrenches, bottle cappers, wrench boxes, valve lifters, can openers, automobile luggage carriers, etc., are blanked, shaped and made in the rough. Some of these presses are specially equipped with dial feeds and others are roll fed; that is a roll of strip steel is hung on a fixture and feeds automatically into the press, the product being dropped into a receptacle by the machine.

The light press department is on the third floor and is equipped with 15 presses for punching out boxes, wrench set cases, mouse traps, and various items of light construction. There are more than 750 dies for use in these two departments and these are all active, as the company destroys all dies that become inactive or obsolete.

The tool and die room, Fig. 2, is thoroughly modern and completely equipped with all necessary machinery for making tools, dies, jigs, gauged racks, etc. Some 16 skilled diemakers and machin-

ists are employed in this department. Gas-fired furnaces for the heat treating of the various tools and dies are also included in the equipment.

The machine and repair shop is very similar to the tool and die room and just as completely equipped with modern machinery and appliances. Here are made the tools and some new and improved devices for the screw machines, jigs for production and assemblies, and all factory repair work.

The hardening or heat treating department is located on the first floor. The cyanide process is used and there are seven cyanide pots which harden more than four and a half tons of products every day.

Screw Machine Department

The screw machine department, Fig. 3, is also on the first floor and here are located 65 automatic screw machines producing a variety of products including various forms: sockets, socket wrenches, drill holders, tap wrenches, hammers, valves, grinders, etc. One machine turns out a special nut for a flat wrench at the rate of 1500 per hour. Another with four spindles will drill 5000 pieces per hour up to $\frac{1}{8}$ inch in diameter. For the large socket wrenches, machines weighing 7000 lbs. are used. Most of these machines are driven with individual motors.

Nickel Plating Equipment

The nickel plating room contains standard equipment for this process including one large motor driven conveyor layout and three smaller set-ups of the conventional double cylinder type.

The conveyor carries 54 vertical travelers in an ascending and descending progress through a series of tanks containing 4500 gallons of solutions, making the circuit and unloading all in a period of twenty minutes. Thus if a traveler carries on each of its two racks as

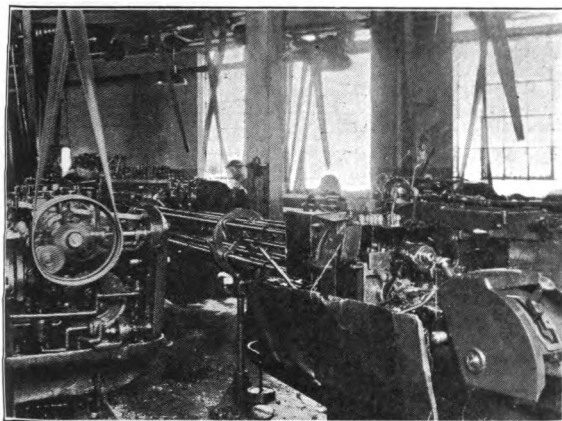


Fig. 3 Corner in automatic screw department in which 65 automatic screw machines are always kept busy.

many as 100 items, as it does in the case of certain products, there have been nickel plated in one complete circuit 10,800 pieces in the short space of twenty minutes. The nickel anodes, copper carbonates, and various salts and acids in these solutions alone, represent by the way of a standing investment some thousands of dollars. They require scientific care and replacement from day to day.

The Indestro Company is installing, at this time as a supplement to its plating outfit, a dryer and polisher which dispenses with all tumbling and detail hand applications receiving the product directly from the tanks, automatically drying and polishing it and delivering it at the discharge end of the machine in a perfectly finished state. A machine of the same make built for the Gillette Razor Blade Co. is said to wash, rinse and dry four million blades a day.

This machine is 28 ft. long, 9 ft. high and 6 ft. wide, and consists of a revolving drum set in a steel frame. The work as it progresses through this drum, first passes over gas flames which dry it and then moves through sawdust thereby receiving its polish. The work is then automatically discharged into containers.

Cleaning and Burnishing

Adjacent to the plating room is the cleaning, burnishing and buffing department. Grease, oil and dirt are removed in a washing machine, shown in Fig. 4, which is 41 ft. long, 6 ft. high and 3 ft. wide. Through this machine runs a continuous traveling conveyor of heavy wire screen, the products being loaded onto one end by hand and ejected from the other automatically. In the first half of this machine they are subjected to streams of hot water while in the other half they are dried with

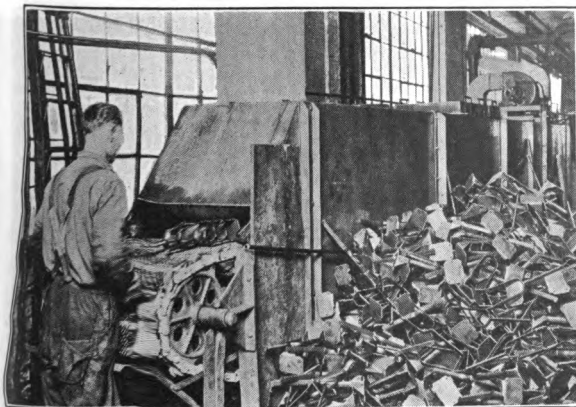


Fig. 4 Washing and drying stamped bottle capping machines.

the heat produced by a battery of gas burners. Among other items of equipment is a battery of 22 rotary burnishers for polishing.

The assembly, which is on the third floor, consists of long rows of benches where girls put together and pack in cartons socket wrench sets, automobile wrenches, nut and tap sets, hammers, pliers, grinders, drill holders, drill braces, and all manner of finished goods. The separate parts are delivered in trays by lift trucks. Bench presses driven from a line shaft are used to put in the spring and ball into the handle of the display wrench. There are a few forming presses for last operations and a riveter for riveting blades into can openers. Mouse traps are also assembled here and an automatic spring winding machine is provided for making the springs.
